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NPIC/TSSG/DED-1144-68  
22 March 1968

MEMORANDUM FOR: Chief, Technical Services & Support Group

SUBJECT : [ ] High Precision Stereo Comparator

1. The Executive Director of NPIC has requested a recommendation from us concerning the probability of technical success of the [ ] High Precision Stereo Comparator. The following is an analysis of the potential problem areas and a recommendation from the Development & Engineering Division.

2. There are four major areas of consideration: the mechanical implementation of the Comparator, the interferometer measuring system, the correlation system, and the optics package. With regard to the first three items, [ ] and their primary subcontractor, [ ], have these areas well in hand. There are some reservations, however, about the optics.

3. Regarding the optics, we have had a series of conversations with [ ] our optical consultant, and a very conservative scientist. The latest of these discussions took place today and relates to (1) previous discussions between [ ] and [ ] (project officer) and to (2) [ ] trip to [ ] where he discussed the optical system with [ ] optical consultant) and [ ] project manager). Other commitments precluded [ ] from going to [ ] to visit and converse with the company first-hand, since he had to proceed to [ ] on an [ ] contract. The essence of the situation is this: After reviewing the calculations, ray tracing, and modulation transfer function curves, [ ] felt that he still could not give us a realistic evaluation of the probability of success of the system, mainly because of the large number of optical surfaces--some 100. However, he was willing to give us certain personal opinions:

a. He feels that [ ] is an extremely capable optical theoretician and [ ] is conscientious and highly capable engineer, though no optical expert, and that these two individuals have considerable confidence in [ ] ability to perform.

b. He was neither able to affirm nor negate [ ] capability, having been able to quote historical examples of both poor and excellent performance. It would realistically require a visit on his part to [ ] and time precludes our taking this approach prior to negotiation.

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25X11 SUBJECT: [ ] High Precision Stereo Comparator

25X11 c. [ ] feels that the optical system can be built.  
25X11 He also feels that possibly two companies in the United States,  
25X11 [ ] might be able to do a superior job to [ ] 25X11  
25X11 However, he also felt that this would be an unrealistic recommendation  
25X11 since we couldn't possibly afford it. The price of an optical system  
25X11 such as this from these firms could run anywhere from 3 to 5 times  
25X11 what [ ] is proposing with considerable delay in delivery.

25X11 d. The only way that [ ] could really confirm or negate 25X11  
the design would be to essentially rerun the entire system. The  
magnitude of this task is essentially to redesign it himself--he has  
neither the time nor the inclination. It is too complex for any other  
approach to provide a very positive answer on his part.

25X11 e. [ ] further felt that taking his best current know-  
ledge of the system, and what we want to use it for, that it is fairly  
probable that the ultimate system as designed will fall slightly  
below the stated specifications but would be close enough to those  
specifications to still produce an acceptable instrument. [ ] 25X11  
then suggested to me that with these caveats he felt it would be  
realistic for us to go ahead with [ ] as a contractor because if 25X11  
certain areas of the system did not work out, e.g., the zoom lens  
anamorph etc., we would still be able to redesign these elements at  
a cost still considerably less than the alternative of going to some-  
one else.

4. It appears reasonable to us, all things considered:

a. That there isn't a 100% probability of success of the opti-  
cal system; in an optical system this complex there can't be.

b. That the probability of an acceptable system somewhat less  
than meeting the specifications is reasonably high;

25X11 c. That the cost of going to [ ] would be pro- 25X11  
hibitive both in terms of the cost of the optical system itself and  
in delays to the prime contract;

25X11 d. That since [ ] recommends [ ] it is contractually poor 25X11  
practice to force them to some other subcontractor since this essen-  
tially gives them an "out" if [ ] performance is substandard. 25X11

25X11 e. Under the anticipated contractual relationship, [ ] is still 25X11  
responsible for [ ] performance. We should continue to hold  
them responsible.

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25X1 SUBJECT: [ ] High Precision Stereo Comparator

25X1 5. It is our recommendation that we permit [ ] to subcontract the  
25X1 optics package to [ ] since we have no reasonable alternative; further,  
25X1 we will attempt to write into the contract every reasonable safeguard we can;  
i.e., close monitoring, tight specifications, and contractual guarantees.  
Finally, we recommend that [ ] inspect the optical train at [ ]  
during the early stages of fabrication to make sure that nothing is going  
awry. We can then make any corrections needed at the earliest possible  
date.

[ ]  
Chief, Development & Engineering Division,  
TSSG

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